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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/771,705	01/30/2001	Kiichi Ucyanagi	108459	9488

7590 08/24/2004

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EXAMINER

CHU, KIM KWOK

ART UNIT PAPER NUMBER

2653

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/771,705

**Applicant(s)**

UEYANAGI, KIICHI

**Examiner**

Kim-Kwok CHU

**Art Unit**

2653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on RCE filed on 6/17//2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-16 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**Claim Rejections - 35 USC § 103**

1. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.*

2. Claims 1-4, 6, 8-12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohba et al. (U.S. Patent 5,802,036) in view of Fujii (U.S. Patent 5,818,811) and Koyama et al. (U.S. Patent 6,141,302).

Ohba teaches an optical reproduction apparatus for reproducing information from an optical recording medium very similar to the instant invention. For example, Ohba teaches the following:

(a) as in claim 1, a recording layer in the optical recording medium 7 (Fig. 4);

(b) as in claim 1, an irradiation optical system 1-3 and 12 comprising an annular light shade 3 for condensing a laser light and irradiating the recording layer with the light (Fig. 4; . column 2, lines 5 and 6);

(c) as in claim 1, the laser light having a light intensity distribution the center portion of which is lower than that of its peripheral portion (Fig. 2B; column 2, lines 1-10);

(d) as in claim 1, a reproduction optical system 5, 9 and 10 reproduces the information from the reflected light (Fig. 4);

(e) as in claim 1, the reproduction optical system 9 shades a peripheral portion of a reflected light (Figs. 4, 5A-5C; column 7, lines 49-54);

(f) as in claim 1, reproducing the information from the center portion of the reflected light (Figs. 4);

(g) as in claim 2, the irradiation optical system includes an optical element 3 provided in a light path of the irradiation optical system and forming the light intensity distribution (Fig. 4);

(h) as in claim 3, a laser light source 1 for emitting the laser light (Fig. 4) ;

(i) as in claim 3, an optical filter 3 provided in a light path between the laser light source 1 and the optical recording medium 7, transparency of a center portion of the optical filter being lower than that of its peripheral portion (Fig. 4; column 2, lines 1-10);

(j) as in claim 4, a laser light source 1 for emitting the laser light; and an optical filter 3 provided at an output surface of the laser light source, transparency of a center

portion of the optical filter being lower than that of its peripheral portion (Fig. 4; column 2, lines 1-10);

(k) as in claim 6, the reproduction optical system includes an optical filter 9 provided in a light path of the reproduction optical system, transparency of a center portion of the optical filter 9 being higher than that of its peripheral portion (Fig. 4);

(l) as in claim 8, the irradiation optical system and the reproduction optical system include a common optical element 5 which is provided in an common optical path of the irradiation optical system and the reproduction optical system, form the light intensity distribution of the irradiation laser light, and reflect the center portion of the reflected light toward a direction different from an incident direction (Fig. 4);

(m) as in claim 9, an optical element 3 provided in an optical path of the irradiation optical system and forming the light intensity distribution (Fig. 4);

(n) as in claim 9, a simple reflecting film 5 at a center portion of a section of a common optical path of the irradiation optical system and the reproduction optical system (Fig. 4);

(o) as in claim 9, a polarization beam splitter 5 at a peripheral portion of the center portion of the section, the polarized beam splitter 5 reflecting or transmitting according to polarization of the reflected light (Fig. 4); and

(p) as in claim 12, the reproduction optical system 9 separates a peripheral portion of a reflected light reflected from the recording layer (Fig. 4).

However, Ohba does not teach the following:

(a) as in claim 1, a super-resolution film is deposited on a recording layer 22;

(b) as in claim 1, a condensing lens is arranged between a light shade and a photodetector;

(c) as in claim 10, the reproduction optical system includes an error signal generation unit 91-93 which generates an automatic focusing error signal or a tracking error signal from the center portion of the reflected light;

(d) as in claim 11, the reproduction optical system includes an error signal generation unit which generates an automatic focusing error signal or a tracking error signal from the peripheral portion of the reflected light; and

(e) as in claim 12, the super-resolution film is an aperture type super-resolution film.

Koyama teaches a super-resolution optical information system (Fig. 1) having a condensing lens 6 arranged between a light shade 12 and a photodetector 7 (Fig. 5).

Fujii teaches an optical recording medium having the following features:

(a) an aperture type super-resolution film 241 deposited on a recording layer 242 (Fig. 1A; column 2, lines 36-46);

(b) the reproduction optical system 26 includes an error signal generation unit 27 which generates an automatic focusing error signal or a tracking error signal from the center portion of the reflected light (Figs. 8 and 9; the reflected light includes a center portion); and

(c) the reproduction optical system includes an error signal generation unit which generates an automatic focusing error signal or a tracking error signal from the peripheral portion of the reflected light (Figs. 8 and 9; the reflected light includes a peripheral portion).

A pin-hole type light aperture such as Ohba's light shade 9 is used to block off the reflected side lobes so that it will be detected by the photodetector. To further prevent interference signals such as crosstalk components from an adjacent track, it would have been obvious to one of ordinary skill in the art to position Ohba's light shade in the far field region of the photodetector and use a condensing lens such as Koyama's arranged between the light shade and the photodetector, because Ohba's light shade on the far field region masks margin rays such as cross talk components and Koyama's condensing lens focuses the center portion of the reflected light beam to the photodetector.

A light beam with its central portion shielded can be used as a super-resolution light beam for recording data in a recording medium, however, when reproducing the high density data stored in the recording medium, a super-resolution layer is needed where it has an aperture/opening for allowing only one data to be accessed by the light beam. Hence, for a super-resolution read/write operation, it would have been obvious to one of ordinary skill in the art at the time of invention to use a super-resolution layer, such as Fujii's reproducing layer 241, in Ohba's recording medium as an aperture layer, because the aperture layer only allows data to be transferred/accessed in the aperture which is very small compared to the light spot and therefore super-resolution is realized.

Furthermore, although Ohba does not disclose extracting servo signals from his photodetector means, when Ohba's optical head requires proper movements such as tracking and focusing, it would have been obvious to one of ordinary skill in the art to use an error generating device such as Fuji's in Ohba's reproduction optical system so that a focusing error signal and a tracking error signal are generated to provide servo operation to the optical head.

3. Claims 14-15 have limitations similar to those treated in the above rejection, and are met by the references as discussed above.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohba et al. (U.S. Patent 5,802,036) in view of Fujii (U.S. Patent 5,818,811) and Koyama et al. (U.S. Patent 6,141,302) and further in view of Kewitsch et al. (U.S. Patent 6,274,288).

Ohba in view of Fujii and Koyama teach an optical reproduction apparatus for reproducing information from an optical recording medium very similar to the instant invention. However, Ohba in view of Fujii and Koyama do not teach the following:

(a) as in claim 5, the irradiation optical system includes a semiconductor laser for emitting a laser light having the light intensity distribution due to a TEM mode.

Kewitsch teaches a donut shape light beam generated by a TEM mode laser source (Fig. 17b; column 18, lines 9-12).

Super-resolution light has a donut shape light distribution. In order to achieve this, a super-resolution light beam can be generated by blocking the light in the center such as Ohba's or by a TEM mode laser source such as Kewitsch's. Hence, it would have been obvious to one of ordinary skill in the art at the time

of invention to use a light source with a TEM mode light distribution in Ohba's optical reproduction apparatus, because the TEM mode light beam generates a donut shape light distribution.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohba et al. (U.S. Patent 5,774,444) in view of Fujii (U.S. Patent 5,818,811) and Koyama et al. (U.S. Patent 6,141,302) and further in view of Tsai (U.S. Patent 6,285,652).

Ohba in view of Fujii and Koyama teach an optical reproduction apparatus for reproducing information from an optical recording medium very similar to the instant invention. However, Ohba in view of Fujii and Koyama do not teach the following:

(a) as in claim 13, the super-resolution film is a scattering type.

Tsai teaches a scattering type super-resolution film (Figs. 3 and 4, column 3, lines 35-37).

Instead of an aperture type of super-resolution film, a near-field type diffraction layer can also generate super-resolution. Hence, for a super-resolution read/write operation, it would have been obvious to one of ordinary skill in the art at the time of invention to use a super-resolution layer such as

Tsai's dielectric and metal film combination as illustrated in Fig. 4, in Fujii's recording layer as a scattering type super-resolution layer, because the scattering layer generates a total internal reflection for a near-field light beam which has a super-resolution effect but is brighter than a super-resolution light beam which has its central portion blocked.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohba et al. (U.S. Patent 5,802,036) in view of Fujii (U.S. Patent 5,818,811) and Koyama et al. (U.S. Patent 6,141,302) and further in view of Shimano et al. (U.S. Patent 5,774,444).

Ohba in view of Fujii and Koyama teach an optical reproduction apparatus for reproducing information from an optical recording medium very similar to the instant invention. For example, Ohba teaches the following:

(a) as in claim 16, a recording layer in the optical recording medium 7 (Fig. 4);

(b) as in claim 16, an irradiation optical system 1-3 and 12 comprising an annular light shade 3 for condensing a laser light and irradiating the recording layer with the light (Fig. 4; column 2, lines 5 and 6);

(c) as in claim 16, the laser light having a light intensity distribution the center portion of which is lower than that of its peripheral portion (Fig. 2B; column 2, lines 1-10);

(d) as in claim 16, a reproduction optical system 5, 9 and 10 reproduces the information from the reflected light (Fig. 4);

(e) as in claim 16, the reproduction optical system 9 shades a peripheral portion of a reflected light (Figs. 4, 5A-5C; column 7, lines 49-54); and

(f) as in claim 16, reproducing the information from the center portion of the reflected light (Figs. 4).

However, Ohba does not teach the following:

(a) as in claim 16, a super-resolution film is deposited on a recording layer 22;

(b) as in claim 16, a condensing lens is arranged between a light shade and a photodetector; and

(c) as in claim 16, a modulation unit for modulating the laser light passing through an optical path of the irradiation optical system in accordance with the information.

Fujii teaches an optical recording medium having the following features:

(a) an aperture type super-resolution film 241 deposited on a recording layer 242 (Fig. 1A; column 2, lines 36-46).

Koyama teaches a super-resolution optical information system (Fig. 1) having a condensing lens 6 arranged between a light shade 12 and a photodetector 7 (Fig. 5).

Shimano teaches the following:

(a) a modulation unit 235 for modulating the laser light passing through an optical path of the irradiation optical system in accordance with the information (Fig. 26).

A light beam with its central portion shielded can be used as a super-resolution light beam for recording data in a recording medium, however, when reproducing the high density data stored in the recording medium, a super-resolution layer is needed where it has an aperture/opening for allowing only one data to be accessed by the light beam. Hence, for a super-resolution read/write operation, it would have been obvious to one of ordinary skill in the art at the time of invention to use a super-resolution layer, such as Fujii's reproducing layer 241, in Ohba's recording medium as an aperture layer, because the aperture layer only allows data to be transferred/accessed in the aperture which is very small compared to the light spot and therefore super-resolution is realized.

A pin-hole type light aperture such as Ohba's light shade 9 is used to block off the reflected side lobes so that it will be detected by the photodetector. To further prevent interference signals such as crosstalk components from an adjacent track, it

would have been obvious to one of ordinary skill in the art to position Ohba's light shade in the far field region of the photodetector and use a condensing lens such as Koyama's arranged between the light shade and the photodetector, because Ohba's light shade on the far field region masks margin rays such as cross talk components and Koyama's condensing lens focuses the center portion of the reflected light beam to the photodetector.

A light beam irradiated from a laser source such as Ohba's does not contain any information. In order to write data with the light beam, a modulating device is needed so that the light beam's intensity is changed based on the data. Hence, it would have been obvious to one of ordinary skill in the art to add an modulating means such as Shimano's to Ohba's laser source, because the modulator varies the intensity of the writing light beam with data to be recorded.

***Allowable Subject Matter***

7. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

As in claim 7, the prior art of record fails to teach or fairly suggest the following features:

(a) the reproduction optical system includes a reflecting optical element including a reflecting member which has an outer shape smaller than the reflected light, reflects the center portion of the reflected light toward a direction different from an incident direction of the reflected light and allows the peripheral portion of the reflected light to pass through.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over, the prior art of record.

9. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks Washington, D.C. 20231  
Or faxed to:  
(703) 872-9306 (for formal communications intended for  
entry. Or:

(703) 746-6909, (for informal or draft communications,  
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Hand-delivered responses should be brought to Crystal Park  
II, 2021 Crystal Drive, Arlington. VA., Sixth Floor  
(Receptionist).

Any inquiry of a general nature or relating to the status of  
this application should be directed to the Group receptionist  
whose telephone number is (703) 305-4700.

Any inquiry concerning this communication or earlier  
communications from the examiner should be directed to Kim CHU  
whose telephone number is (703) 305-3032 between 9:30 am to 6:00  
pm, Monday to Friday.

*kc 8/19/04*  
Kim-Kwok CHU  
Examiner AU2653  
August 19, 2004

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